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Description of EP0458019

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The invention refers to a serving and a display device in accordance with the preamble of Claim 1.

For an interactive dynamic traffic management required one in vehicles serving and display devices, with which drivers can procure themselves all necessary informations, like e.g. Guidance recommendations for the shortest, fastest or the lowest travel costses causative routes, park and the tourist information etc. It should be also possible to pay with these apparatuses automatic from driving cars road use fees as well as book parking lots.

In the German patent specification 29 23 634 is a traffic control system described, for which one serving and display devices that here mentioned type required. They are a component of the required vehicle equipment, to except the navigation computer the communication apparatus to the data exchange with road-lateral mechanisms (beacons), a flux valve for direction of travel regulation and a way pulse generator to the measurement of the traveled path belong.

In the European patent application 89 11 53 86 is a system for automatic paying of motorway fees described, for which the mentioned above apparatus should be likewise more usable.

In the European Patent Laid open 0,322,573 is a serving and a display device for a traffic control system described, which as compact vehicle terminal formed is and arranged on the dashboard of an automobile. This apparatus points among other things also the data communications equipment to the beacon in this case with the help of the infra-red light transmission up. This vehicle terminal has however various disadvantages. For the data transmission by infrared radiation one plans meanwhile mechanisms into the outside mirror of the vehicle. Multiple one is felt the terminal on the dashboard as disturbing, on the other hand is one anxious, electronic attachments, like e.g. CD-Player or power-output stages in the area of the car radio, thus in the center console of the vehicle to insert.

From the DE-AI-34 08,728 a serving and a display device for information systems are in automobiles known, shove outable arranged with which a mobile mini-computer with two key fields and a display unit is in a recess of a patch in and. The second key field is so arranged that it not continuous, e.g. with pushed in mini-computer, operated will can.

Object of the invention is it to train a serving and a display device further in such a way that simpler, possibly. additional incorporation in an automobile without extensive installation expenditure possible is. Symbols and characters for the visual display of routing information should be as large as possible that the motorist can to recognize and the operation as simple as possible be them easy during the travel, so that the driver of the traffic happening does not become deflected.

This object becomes 2 dissolved with an above serving and display device with the features of the claim 1 or.

In a first embodiment of the invention the serving and display device with the associated navigation computer forms a compact unit and corresponds with its extents to the standardized masses for car radios, so that it can become incorporated into a present bay for car radios without large effort.

In another embodiment of the invention the navigation computer in a car radio planned for it is integrated whereby the serving and display device are formed as a flap arranged at the front side of the car radio.

At the front side of the serving and display device a large diagram display for the routing information announcement and besides additional separate character display as well as a opening by hinges control device with a viewing window is provided. In the lifted up state the view is on the character display free by the viewing window. To the operation of the apparatus for the most important functions, which should be also possible during the travel, the essential operating elements are, e.g. on the front of the control device, thus during lifted up control device. Keys, arranged and form a first control patch. For a more extensive operation of the apparatus an editing keyboard, which forms a second control patch, is arranged on the inner side of the control device, which can become operated during folded down control device. Are appropriately the serving and display device and/or. the flap with the navigation computer and/or. Car radio electric and mechanical releasable connected.

The serving and display device allowed thus a various control function. Also such persons can become the handling possible, which are not used, with typewriters, text devices and/or by a simple prompting. To go around computers. Here simple control procedures are also possible during the travel. However more complicated control procedures can, as line-to-store transfer of destination addresses and coordinates become, with the help of the editing keyboard only performed with standing vehicle. Therefore a switch is provided in advantageous manner, which is more operable by the lifted up control device, so that the front arranged few control keys are electric unlocked. During folded down control device the editing keyboard becomes unlocked over this switch, whereby from reasons of the road safety provided is to only make the operability possible of the editing keyboard if the vehicle stands, i.e. if the way pulse generator and the navigation computer the vehicle stop signaled connected thereby.

In advantageous manner the serving and display device in the diagram or character display exhibits a display, those the state of the opened unfold control device with driving car signaled and/or. a request for closing the control flap indicates. A such request can become also electroacoustic outputted.

In a convenient embodiment are the serving and display device and/or. the flap of the navigation computer more separable. But corresponding contact elements for an electrical connection are provided on the rear side of the serving and display device and at the front side of the navigation computer. The serving and display device exhibits own goal memory (addresses, coordinates) and a separate terminal for an external power supply, so that of the navigation computer separate the indicating and control device can become at home or of the front seat passenger operated.

In an other embodiment of the invention the serving and display device points and/or. the flap a module opening for an IC card and the navigation computer of separate smart card contacts at corresponding location up, in order to connect the navigation computer with the IC card direct electrical, whereby in the navigation computer a smart card reader is provided. The IC card can become for example for automatic paying of motorway fees or also park fees used. The use of the IC card is also possible, for example, for other purposes, if in another embodiment of the invention the serving and display device according to invention with navigation computer transfer also selecting and memory functions of an in-car telephone.

If the entire serving and display device are formed as flap, which is arranged at the front side of the car radio with integrated navigation computer, planned for it, then are accessible with the downward folded serving and display device other, however rare used operating elements for car radios, which can exhibit a tape deck. In advantageous manner are the serving and display device and/or. the flap with the associated car radio and integrated navigation computer so formed that also with lifted up serving and display device the car radio in its essential functions with the help of the keys at the front side, which can become first control patch, operated. For this purpose one of the front keys mounted on the control patch is formed, with which key the operating mode navigation or wireless reception or other functions, as mode of operation selector switch (mode key), like e.g. In-car telephone, to be switched on.

Other details and advantages of the invention result from the description of the invention, which becomes in the following explained on the basis the drawing. Show

Fig. 1 a serving and a display device according to invention with navigation computer with lifted up control device, Fig. 2 with folded down control device and Fig. 3 the combined drive with car radio and integrated navigation computer with folded down flap and/or. Serving and display device.

The serving and display device 1 and/or. the flap 17 is shown with the associated navigation computer 9 in Fig.1. A such unit can be installed due to the corresponding mass in the standardized fitting space for a car radio. The serving and display device exhibits 1 on its left front side an actual known diagram display 2 for the display of directional arrows, lane recommendations and other optical symbols in this embodiment. In the right area of the front side the serving and display device exhibits a character field 3 for letters and numerals to the output of summaries. The character field 3 is wide formed and becomes from a control device able to be turned down 4 surrounded, or differently expressed, this control panel flap 4 exhibits a large viewing window 5, which releases the view in the lifted up state on the character field 3. In this embodiment the operating elements of the first control patch are 6 the bottom viewing window 5. These keys 6a, 6b,...permit a serving in the lifted up state.

In Fig.2 the serving and display device are 1 and/or. the flap 17 with associated navigation computer 9 with folded down control device 4 shown. The control device 4 exhibits an editing keyboard 7 as the second control patch, which consists of several key sequences. With this embodiment 5 two series are and below the viewing window 5 a key sequence arranged above the viewing window. The position of the control device 4 becomes 8 scanned by a switch, that during lifted up control device (rest position) for example only the keys 6a, 6b,...the first control patch 6 electric unlocked and thus to the operation, so that also during the vehicle drives, the driver releases the navigation computer and/or. the car radio to serve can. However if the control device 4 is folded down, then the editing keyboard 7 can be served, however only, if the way pulse generators connected to the navigation computer 9, which is not in the drawing shown here, and thus signaled does not supply pulses that the vehicle stands. Around wrong actuations over the keys 6a, 6b,...by unintended affecting during folded down control device 4 to exclude, the keys 6a, can 6b, by means of the switch 8 during this flap position...electric latched its.

Since from safety reasons the control device 4 is to be lifted up in a state of rest and particularly during the travel, provided is, to prevent the display of guidance recommendations with driving car either if the switch 8 announces a folded down control device to make or the driver attentive by the fact that with rolling vehicle a display in the character display: Close control device, become displayed. A such request can be made also by an acoustic output.

Like already above mentioned, the serving and display device are 1 and/or. the flap 17 over series of contacts, which are in Fig.1 and 2 not shown, with the navigation computer 9 and/or. the radio 10 electrically connected. Appropriately however provided is to arrange the serving and display device 1 of the navigation computer 9 more releasable so that it can be carried forward when leaving the vehicle to make for example in order the control system uninteresting for thieves. In addition codes stored in the navigation computer 9 and in the operation part 1, like actual from car radios known, which permit an operation, become only if the corresponding code agrees. Another advantage is with the detachable serving and display device that destinations not only in the vehicle, given by the fact, but also outside of stored to become to be able. The line-to-store transfer of the destinations made over the editing keyboard 7 during opened control device 4. Over this operation also outside of the vehicle or possibly. in the front seat passenger to make to be able, the serving and display device 1 exhibits a goal memory for a variety of addresses and Zielkoordinaten, as well as an electrical connection for an external power supply, which can take place from a power supply unit or also a battery pack (power luggage).

As from the Fig. 1 to 3 apparent, points the serving and display device 1 and/or. the flap 17 a module opening 14

(slit) for an IC card 15 up. This IC card 15 becomes immediately included with the navigation computer 9 contacted (see Fig.3), also the corresponding map reader. With this embodiment the module opening 14 on the top of the serving and display device 1 is arranged.

From Fig.3 is apparent that the serving and display device 1 and/or. the flap 17 over series of contacts 11 with the radio 10 and/or. with the navigation computer 9 electrically is more connectable, so that the serving and display device are more separable 1 of the radio 10 and can when leaving the vehicle be carried forward.

In the Fig.3 the serving and display device 1 17 is shown as flap, whereby the serving and display device altogether able to be turned down 1 and/or. 17 at the front side of a car radio 10, which for example also a Kassettenteil (cartridge insertion port 18) or a CD-Player can exhibit, arranged is. Is in the car radio 10 the navigation computer 9 with integrated.

Over one either simple folding mechanism or but over a mechanical device, which is parallel folding 12 down of the serving and display device 1 to the front side of the radio part of allowed, a combined drive formed, which becomes both for the broadcast enterprise and used for the routing information and as compact apparatus can become into the normal pushing in opening for car radios introduced. The normal radio operation as well as the handling of the apparatus for the display control device 4 over the keys, lifted up by traffic routing information made normally during, 6a, 6b... in connection with the character announcement 3. The serving and display device 1 formed as flap 17 are in Fig.2 in the folded down position shown. To the introduction and/or. to the removal of compact data cartridges as well as for adjusting for example the altitudes/depths of the balance and other special broadcast functions, the serving and display device 1 must be folded down 17. In place of a Kassettenteils also a CD drive assembly can be in the combined drive car radio 10 and navigation computer 9 provided. Thus additional possibilities result, e.g. To offer address listings with coordinates for the goal guidance on CD a stored, whereby the data the navigation computer read by the CD drive assembly become 9 transmitted.

The navigation computer 9 can be with such a combined drive in the standard housing of the car radio with accommodated, for example below the cartridge drive assembly. The noise suppression, the voltage regulation as well as the low frequency amplifiers for one possibly. Acoustic output of routing information can be taken over by the respective component of the car radio with, so that such a combined drive can become not only space-saving but also inexpensive fabricated.

The sending and volume attitude made with such a combined drive with hochgeklappter flap 17 over the keys 6a, 6b..., whereby one of these keys is as a mode key 6a formed. So for example mode knows the 1 a broadcast operation, in mode 2 a call of stored travel goals, in mode 3 query of tourist information etc. in. performed become. By operation of the mode key 6a these operating modes are quasi paged through. Which straight effective is, optical displayed becomes in the character field 3. In addition also a mode position can become over an acoustic output facilitated, so that the driver does not have at all to look on the character field.

Into more favourably wise the character field serves 3 in the broadcast mode as e.g. with conventional radios also for the identification of the set broadcasting station. Display of the transmitting frequency, mono or Sterioanzeige, with radios with RDS decoder also the name of the broadcasting station etc. Beyond that also frequent desired broadcasting stations can on similar manner stored and/or. invoked become, like travel goals, whereby the control comfort becomes significant increased by the editing keyboard 7 (during folded down control panel device 4). The volume can become for example with the two keys 6d digital set, e.g. the arrow for quieter, pointing to the left, and/or. the arrow for louder, pointing to the right. Likewise also the key arrangement can be 6b either for a balance regulation or but for a setting of the volume relationship of the front and the rear speakers provided.

In Fig.3 are still apparent that with lifted up state a contact of the serving and display device 1 with the navigation computer 9 over control contacts 11 made. A contact of the IC card 15 can be made by separate smart card contacts 16, which are 10 raised mounted on the front side of the radio part. Via a corresponding recess in the back wall of the serving and display device 1 then the contact direct at the contact areas of the IC card 15 can take place.

In order not to wear the contact areas out of the IC card undue, the entire serving and display device become first into a corresponding rotary bearing 12 at the navigation computer 9 and/or. Radio 10 used and then by a rotational movement to the contacts 16 of the smart card reader in the navigation computer advanced and at this rests. If one measures the contact stroke as small as absolutely required, then only a very small contact friction and thus a small contact area wear result.

Which here graphically not shown, however an advantageous embodiment and/or. Development of the invention is, is given by the fact that the serving and display device can become 1 also the operation of in-car telephones used. So the destination memory planned in the serving and display device 1 can become also as name memory for telephone numbers used in advantageous manner. Names and also associated geographical coordinates with stored can become beside these telephone numbers. The line-to-store transfer can be made likewise by the editing keyboard 7 like the input not prestored telephone numbers. Over the mentioned already above mode key 6a the driver can call the operating mode in-car telephone with the help of the combined drive 9/10, if it liked to telephone with a specific person. Calls of prestored names with telephone numbers 6b is the possible also during the travel over the keys 6a and. Such a control procedure diverts the driver not stronger as the Sendereinstellung with the radio and is compatible therefore also with verkehrssicherheitlichen considerations.

To the use as telephone selecting equipment the navigation computer is 9 connected with a transmission interface in place of the normal Wähltastatur in the handset with the mobile telephone set, which is arranged at the vehicle somewhere. The function of the handset can be limited thereby to the housing of the hearing cap and the microphone, if the combined drive does not become also used as speakerphone. The speaker and the corresponding electronic circuits of the car radio with are consulted, whereby one can appropriately plan an automatic volume regulation. A separate microphone for acquitting is to be only planned still. Also for telephoning - like already in in-car telephone already provided - an IC card, which becomes introduced in the serving and display device, can become used.

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It is to be still mentioned that that, as in Fig.1 and 2 described, can be detachable serving and display device also independent of the arrangement before the navigation computer at another location with the help of goose neck an arranged, which leads however to a larger installation expenditure.